Title: Information and Disinformation: Social Media in the COVID-19 Crisis

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Word Count: 785

Previous Publications or Presentations: None

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Article type : Commentary - Unsolicited

Information and Disinformation: Social Media in the COVID-19 Crisis

The novel coronavirus disease of 2019 (COVID-19) is a global pandemic with over 4.7 million cases and 316,000 deaths worldwide.[1] Social media, defined as "electronic communication through which users create online communities to share information, ideas, personal messages, and other content,"[2] has played an important role during the COVID-19 pandemic. In fact, social media usage amongst the public has previously been demonstrated to significantly increase in cases of natural disasters and crises.[3] However, it is important to consider the benefits and limitations of this medium.

There are several key benefits to social media during times of national crises. First, social media can be utilized to facilitate the distribution of new information to providers on the front lines. As of May 19th, 2020, there are 14,479 articles on COVID-19 available in PubMed, making it nearly impossible to keep up with the most recent literature. Social media has been demonstrated to be an effective tool for knowledge translation by shortening the time from publication to dissemination and application of information.[4] During a time when information changes quickly, it is critical for providers to keep up to date with the evidence and social media can facilitate this. The decreased knowledge translation time provided by social medial allows providers to analyze and debate the literature in real time, addressing the internal and external validity of the findings. Examples of this include recent online discussions regarding controversial studies of hydroxychloroquine[5] and remdesivir.[6]

Additionally, this can allow healthcare leaders to directly communicate with the public, sharing information that was traditionally relegated to medical journals and hospital video sessions. This is evidenced by healthcare leaders having prominent social media accounts with large numbers

of non-physician followers. Examples of this include Dr. Esther Choo (113,000 followers), Dr. Megan Ranney (36,000 followers), and Dr. Jeremy Faust (36,000 followers), who have utilized Twitter and other social media outlets to increase awareness of healthcare crises and public health needs. Moreover, experts can openly debate topics, while identifying and challenging false information in real-time.

Finally, social media can allow healthcare providers and healthcare systems to identify trends and prepare for surges in acuity. This may allow for advanced procurement and rationing of needed supplies to protect healthcare providers and patients, as well as altering hospital functions to better sustain the anticipated challenges. For example, an awareness of critical national personal protective equipment (PPE) shortages allowed for hospitals to begin to develop strategies to reallocate and ration PPE where possible and engage local businesses to repurpose production for medical supplies. These systems can also share information in a much more open manner to facilitate incidence tracking, as well as identify differences in incidence rates. A similar approach has been used previously to prepare for hurricanes and tornadoes in real-time.[3]

However, it is also important to consider some of the limitations of social media in this setting. One major consequence of the massive amount of information being shared via social media is difficulty with filtering information. The online social media tracking program TalkWalker™ (New York City, NY, USA) reported that COVID-19 had been referenced on social media 40.2 million times from May 12th, 2020 to May 18th, 2020.[7] As the sheer volume of social media information rises, the signal-to-noise ratio lowers, and it can become difficult to identify factual and pertinent information.

Additionally, social media can allow for virtual celebrities and influencers (both medical and non-medical) to have a significant influence on information spread due to their number of followers, regardless of the accuracy of their information. This can lead to rapid spread of incorrect information and significant potential for harm. One study found that physicians are not able to reliably assess the quality of online resources using their gestalt alone.[8] Another study found that up to 27% of physician bloggers had undisclosed financial conflicts of interest.[9] This can be particularly problematic given the increased emphasis on novel therapeutic agents

targeted toward COVID-19, which may have harmful side effects. This may be even more challenging for the public, as a wide array of physicians appear on social media sites, occasionally proposing strategies which conflict with recommended care.

Therefore, we propose the following strategies to improve the role of social media during COVID-19 and future emergencies. First, we must train both providers and the general public how to properly evaluate social media resources. This should include an assessment of conflicts of interest and looking beyond the headline to review the supporting literature. One approach could be to create online tutorials using real examples from social media to demonstrate the importance in a more tangible manner. Additionally, a system could be implemented by which social media outlets are vetted by a third party to ensure accuracy and publicly display the results in order to inform the public of notoriously inaccurate and misleading sources of information. We should also help identify and expand the reach of reliable healthcare experts on social media. Twitter has recently approached this by substantially increasing the number of 'verified' healthcare experts on their site. Creating and publicizing lists of reliable public health experts, as well as amplifying their messages via social media will also help in this regard. Additionally, we should challenge online experts to include their credentials, specialty of training, conflicts of interest, and if active in clinical care, what environment they work in. This would aid users in being able to most clearly contextualize their comments and recommendations. We should also work with social media companies to help adapt algorithms, so that more reliable information appears at the top of search indices. Finally, we should create centralized locations for medical professionals to share and disseminate reliable information and engage in discussion, as well as post-publication peer review of the literature in a sustainable centralized database.

Social media is more important now than ever, but we must be aware of the potential limitations. Healthcare providers have been leaders on the front lines of this crisis since the onset. It is important to be leaders in social media, as well.

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